Geophysical Research Abstracts
Vol. 15, EGU2013-2030-1, 2013
EGU General Assembly 2013

Coda wave attenuation tomography in northern Morocco

Abdrahim Boulanouar (1), Mimoun Harnafi (2), Sean R. Ford (3), Lahcen El Moudnib (1,2), Antonio Villasenor (4), Josep Gallart (4), Mohamed Majid Himmi (1), Abdelali Rahmouni (1), Mohamed Boukalouch (1), and Jamal Sebbani (1)

(1) Physics department, Faculty of science, Mohamed V-Agdal university, Rabat, Morocco (cocanouar@gmail.com, lahcenelmoudnib@gmail.com), (2) Earth science department, scientific institute, Mohamed V-Agdal university, Rabat, Morocco (harnafi@israbat.ac.ma), (3) Ground-based nuclear denotation detection programs, Lawrence Livermore national laboratory, Livermore, USA (sean@llnl.gov), (4) Institute of Earth Science "Jaume Almera", CSIC, Barcelona, Spain (antonio@ictja.csic.es))

Abstract:

In this study we focused on seismic attenuation (1/Qc) tomography in Nothern Morocco. For this purpose two different models are employed : The Single Backscattering model hypothesis of Aki and Chouet (1975) to calculate values of coda Q (Qc) and the Back Projection technique of Xie and Mitchell (1990) to estimate lateral variation in Qc via a tomographic inversion . For this investigation, the coda Q method is applied to a number of 94 local earthquakes with a magnitude between 0.7 and 4. The digital seismograms of these earthquakes were recorded during the year 2008 by both local temporary and permanent broadband seismic station network deployed in Northern of Morocco. The Qc quality factor values have been computed at central frequencies 0.75, 1.5, 3, 6 and 12 Hz .The lapse time windows is restricted to 30s in order to sample the earth's crust only. The Qc results indicate that strong frequency dependence follow a power law for the entire area. The preliminary results of seismic coda Qc attenuation tomography shows a dependence at each frequency band, between seismic attenuation and the geology structure units in the study area, especially in the region of Al Hoceïma and the eastern part of the Rif which are characterized by a high attenuation values due to active faults area, while a low attenuation values are seen in the west and the south of the Rif in high frequencies.

Keywords: Single Backscattering model, Qc quality factor, Back Projection technique , Attenuation, Tomographic inversion , Northern Morocco.